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entire question of localization is narrow, and Goltz fails to reckon with many groups of facts. For example, while claiming that his view of the structure of the forebrain offers the fullest support to surgical interference with that organ, he is silent as to the means by which the surgeon can localize the tumor which he is about to remove. At the same time, the accounts in the paper are vivid, and we have for the first time a picture of the bearing of dogs with lesions of such extent. The plate contains a photographic reproduction of the four brains discussed, but in all cases the terms right and left in the text are reversed in the plate, the figures being apparently the mirror-pictures of those described.

La concentrazione del sangue come condizione di stimolo del sistema nervoso centrale. J. NOVI. *Lo Sperimentale*, Heft 5, 1887.

Taking his departure from the fact that when the quantity of sodium chloride in the organism undergoes a marked increase, then muscular twitchings followed by clonic and tonic contractions occur, the author presents the results of experiments made on dogs with a view to explaining this fact. The principal results are as follows:

1. When a 10 per cent solution of sodium chloride is injected into the veins it causes cramps in all the muscles so soon as the percentage in the blood has become about twice the normal.

2. Sodium chloride, under these conditions, does not change haemoglobin into methaemoglobin, and therefore acts differently from the alkaline chlorides investigated by Marchand. The blood taken from the animal during the experiment was dark, but on exposure to the air, became light red, and furnished a colorless serum.

3. The cause of the cramps cannot be a direct action of the sodium chloride on the muscles, because a previous injection of curare prevents the contractions, while a subsequent injection of it causes the contractions to cease after they have begun.

4. The action is not one on the peripheral nerves, because when one circulates blood with double the normal quantity of sodium chloride in a sound limb, the contractions do not occur. If when the contractions are most violent, the nerves supplying a limb are cut, they instantly cease. In a dog that had died from the effects of sodium chloride, the peripheral nerves and muscles were still very excitable, while the substance of the brain was not so.

5. The seat of the reaction is in the brain, and there only, so that dogs deeply narcotized with chloroform may be killed by the injection of the sodium chloride without showing any contractions.

6. The loss of water from the brain is the cause of the contractions. The examination of the gray substance of two normal brains, as compared with two from animals which had been treated with sodium chloride, showed from 5 to 6 per cent less water in the latter.

7. The same explanation is probably true for the cramps caused by an analogous but pathological concentration of the blood—those of cholera, for example.

Ueber die Windungen des menschlichen Gehirns. II. Ueber die Entstehung der Grosshirnwindungen. A. RICHTER. *Virchow's Archiv*, CVIII, 3, S. 398.

In the first part of this investigation the author sought to explain certain abnormal developments in the case of idiots, such as mikro-

gyrie, etc. In this second part he presents the results of his investigations on seven foetal brains. The age is inferred from the length of the longitudinal fissure. This in the smallest specimen was 1.5 cm., and in the largest 5.1 cm. In the younger specimens there appeared, on all parts of the cerebral vesicle, longitudinal and transverse foldings which later disappeared. This disappearance was quite complete in a brain in which the longitudinal fissure was 3.2 cm., and is caused by the distending action of the blood-vessels. The sulcus calloso-marginalis, as well as its prolongations the fiss. parieto-occipitalis and calcarina, arise by pressure from the outside. After the longitudinal fissure has reached a length between from 4.7 to 5.1 cm., invaginations and infoldings of the walls of the hemispheres do not occur, but only secondary sulci develop. These are not due to an excessive growth of the gray matter, but to a retardation of growth along certain lines, with a concomitant development between these lines. The energy of development differs, therefore, in the different parts of the cortex, and this difference is explained as due to the motions of the foetal brain. Each contraction of the heart causes a pulsation of the walls of the hemispheres, and these pulsations, passing as waves on the surface of the brain, have constant lines of interference. Along these lines of interference the development of the ganglion cells is retarded, and so a depression or sulcus is developed. As the brain enlarges, new lines of interference and consequently new sulci are being continually developed. Besides these pulsations, which are one factor, the irregularities in growth and the mechanical action of the skull are both to be taken into account, as stated above.

Das Rindenfeld des Facialis und seine Verbindungen bei Hund und Kaninchen. S. EXNER und J. PANETH. Arch. f. d. ges. Phys. XLI, S. 349.

It is found that the cortical centre for the facialis on one side controls the facialis muscles on both sides, and it is therefore suggested that those muscles which are habitually innervated on both sides simultaneously may be controlled from a single cortical centre. The best evidence for this generalization is found in the relations of the facial centre in the rabbit. In this case, the stimulation of the facial centre causes in all cases movements of the muscles of the face on both sides. Cutting under the portion of the cortex stimulated, stopped the contractions on both sides. An attempt was then made to trace the course of the impulse going to the muscles on the same side as that to which the stimulus was applied. The section of all commissures and the extirpation of the facial centre in the other hemisphere did not interfere with the reaction. Longitudinal section of the medulla did, however, stop it. It is inferred from this that the fibres connected with the nucleus on the same side first cross completely somewhere higher up, and that the impulse passes from the opposite to the same side at the level of the nuclei themselves.

Untersuchungen über die feinere Anatomie des Gehirns der Teleostier. R. FUSARI. Internat. Monatsschrift für Anatomie u. Physiologie, IV, 7-8, S. 275.

From studying the brain of certain teleosts, the author reaches the conclusion that in general the brains of lower vertebrates do not